

Appln No. 09/643,921

Amdt date March 15, 2005

Reply to Office action of December 29, 2004

REMARKS/ARGUMENTS

Claims 1-4, 17-20, 33, 35-37, 49-52, 63-66, 77-80, and 93-96 are pending. Claims 1, 3, 17, 19, 20, 33, 49, 63, 77, and 93 are amended.

Claims 3, 4, 20, 36, 37, 51, 65, 66, 79, 80, and 96 are deemed allowable if re-written in an independent form including all of the limitations of their base claims and any intervening claims. Claims 3 and 20 are re-written in an independent form including all of the limitations of their base claims. However, the re-written claim 20 does not include the limitations of the intervening claim 19. Nevertheless, Applicants respectfully submit that the re-written claim 20 is also allowable over the cited references, because none of the cited references disclose its limitation of "wherein the estimating signal processing complexity comprises estimating maximum power level of a reference signal, long term average power of an error signal, and long term average power of a near end signal." (See, the allowable claim 37 that includes the same limitations.). Accordingly, allowance of the re-written claims 3 and 20, and the dependent claim 19, which is now dependant on claim 20 is respectfully requested.

Claims 1, 17, 19, 33, 49, 63, 77, 93, and 95 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamilton (U.S. 5,721,923); claims 2, 18, 35, 50, 64, 78, and 94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamilton in view of Rust et al. (U.S. 5,263,083). Applicant submits that all of the claims currently pending in this application are patentably distinguishable over the cited references, and

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reconsideration and allowance of this application are respectfully requested.

Independent claims 1, 33, 49, and 77 include, among other limitations, adjusting "adaptation speed of an echo canceller for processing the signal by changing the number of coefficients of the echo canceller;" and independent claims 17, 63, and 93 include, among other limitations, "adjusting adaptation speed of the echo cancellation function by changing the number of coefficients of an echo canceller." Hamilton does not disclose the above limitation.

Rather, Hamilton describes a technique for allocating resources in a call processing system whereby different levels of resources are allocated depending upon the available headroom in the system. However, Hamilton does not disclose any echo canceller, nor does it disclose changing the number of coefficients of an echo canceller.

Hamilton is clear in FIG. 2 that the echo cancellation resource types are different echo cancellation algorithms that are performed by a processor. For example, in a "situation where a particular call requests echo cancellation resources. Blocks 202 and 208 indicate that if the available memory in the system is less than M and the number of inactive channels is less than the value C, then the basic echo cancellation algorithm will be used. The basic cancellation algorithm includes the smallest N of the three algorithms used for echo cancellation." (Col. 5, lines 48-52.). In contrast, the claimed invention changes the number of coefficients of an echo

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canceller. Accordingly, amended independent claims 1, 17, 33, 49, 63, 77, and 93 are not anticipated by Hamilton.

Dependent claims 2, 18, 35, 50, 64, 78, and 94 include the additional limitation of bypassing the echo canceller [or echo cancellation] and suppressing echo of the signal by an echo suppressor [or echo suppression means] instead, when the estimated complexity exceeds a threshold. None of the cited references, alone or in combination, teach or suggest the above recited limitation.

Applicants respectfully disagree with the assertion in the Office action that the "use of half duplex operation . . . when resources for full duplex operation . . . are unavailable," disclosed in Rust, renders the above dependent claims obvious in view of Hamilton. (Office action, page 4, fifth paragraph.). There is no disclosure of bypassing an echo canceller and suppressing echo of the signal by an echo suppressor in Rust.

In fact, Rust emphasizes that "[t]he most common form of echo control is attained by operating the speakerphone in a half-duplex mode. In this technique, a sound-actuated switch is used to control transmission over the speakerphone to a single direction at any time, thus preventing a speaking party's echoes from being re-transmitted to that party. Control circuitry needed to achieve this half-duplex form of operation adds substantially to the cost of a speakerphone" (Col. 1, lines 43-51.). Rust also stresses that "the processing of the signals involves the achievement of echo cancellation that permits a terminal to operate as a speakerphone in a full-duplex mode." (Col. 2, lines 23-25, underlining added.).

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Finally, Rust explains that "there is a statistical possibility that, in a particular telephone system, the user demand for full duplex speakerphone capability may exceed the capacity at some given moment in time. When this condition occurs, the terminal 20, which is exposed to unavailability of full-duplex speakerphone service is switched automatically to half-duplex operation on a back-up basis." (Col. 4, lines 62-68, underlining added.). None of the above descriptions teach or suggest bypassing an echo canceller and suppressing echo of the signal by an echo suppressor. There is no disclosure about how an echo is cancelled in a full-duplex and/or in a half-duplex operation.

Therefore, dependent claims 2, 18, 35, 50, 64, 78, and 94 are also patentable over the cited references as being dependent from allowable independent claims and for the above-mentioned additional limitations they include therein.

In short, the independent claims 1, 17, 33, 49, 63, 77, and 93 define a novel and unobvious invention over the cited references. Remaining dependent claims 4, 18-19, 35-37, 50-52, 64-66, 78-80, and 94-96 are dependent from independent claims 1, 17, 33, 49, 63, 77, and 93, respectively and include all the limitations of their respective independent claims and additional limitations therein. Accordingly, these claims are also allowable over the cited references, as being dependent from allowable independent claims and for the additional limitations they include therein.

In view of the foregoing remarks, it is respectfully submitted that this application is now in condition for

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allowance, and accordingly, reconsideration and allowance are respectfully requested.

Respectfully submitted,
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